Trend Study 27R-2-98

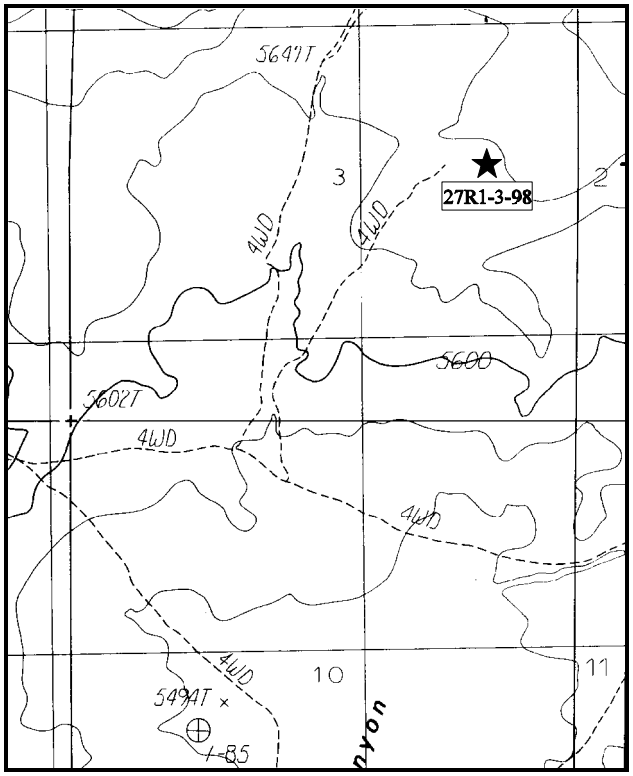
Study site name: John R. Flat Livestock Exclosure . Range type: Mixed Brush .

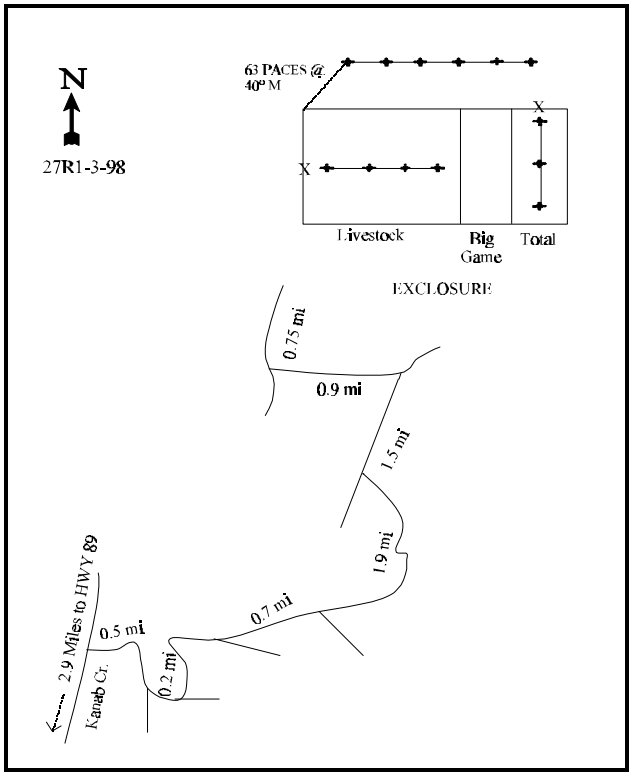
Compass bearing: frequency baseline 0 M degrees.

Footmark (first frame placement) 5 feet. Frequency belt placement; line 1 (11ft & 95 ft), line 2 (59ft), line 3 (34 ft & 71ft).

LOCATION DESCRIPTION

From Kanab, travel north on Highway 89 to the Kanab Creek turnoff. Turn right and go 2.9 miles to another turnoff (you will pass the Best Friends Animal Sanctuary). Turn right, crossing Kanab Creek, and go 0.5 miles to a fork. Stay left and continue approximately 100 feet to another fork. Stay left again and continue 0.2 miles to the next fork. Stay left and continue 0.7 miles to the next fork. Stay left again and travel 1.9 miles to another fork. Go right at this fork and go 1.5 miles to another fork. At this fork, turn left, cross the drainage, and go 0.9 miles to a fork. Go right at the fork for 0.75 miles to the exclosure. The livestock exclosure is nearest the road (lower fence), and the baseline runs down the middle of the exclosure starting at the east side near the taller fence marking the big game exclosure. Count down to the 11th post in from either side to the 0 foot stake.





Map Name: White Tower

Diagrammatic Sketch

Township 42S , Range 6W , Section 3

UTM 4116566.954 N, 366374.242 E

DISCUSSION

Trend Study No. 27R-2

The is another new trend study placed within the livestock exclosure at John R Flat. The exclosure is located on BLM administered land, north of Kanab, and about 1-2 miles south of the White Cliffs. In 1998, permanent trend studies were established outside the exclosure, within the livestock proof portion of the exclosure, and within the big game/livestock proof portion of the exclosure. This study samples the area inside the livestock proof portion of the exclosure. The area within the livestock exclosure is almost 1.4 acres (approximately 60,000 ft^2). Aspect is to the west with a 3-5% slope. Elevation is 5,300 feet. The four-way exclosure was built in the 1960's, but has not been maintained for many years. Repairs were made to the exclosure in the summer of 1998, this included repairing the fence and removing debris and/or trees along the fence line. A pellet group transect shows abundant deer sign within the livestock exclosure with an estimated 114 deer days use/acre. Additionally, some rabbit pellet groups were observed.

Soil textural analysis indicates it to be a sand soil with a strongly acidic pH (5.4). Average effective rooting depth (see methods) was estimated to be 27 inches with an average soil temperature of 72°F at 18 inches. Both potassium and phosphorous measurements were low, 6.4 ppm and 7.7 ppm respectively, and may limit plant development. No rocks or pavement were encountered on the soil surface or within the soil profile. The soil appeared to be more compacted underneath the shrubs than in the bare interspaces. Much of the protective ground cover on this sites comes from litter and cryptogams. Only 6% of the vegetative cover is contributed by herbaceous understory species. Although percent bare ground cover is high (42%), due to the soil texture and the lack of slope, there is little erosion apparent at this time.

The browse species provide 94% of the vegetative cover on the site. Antelope bitterbrush, basin big sagebrush, and sand sagebrush are the most abundant browse species. Basin big sagebrush has an estimated density of 4,380 plants/acre. This appears to be a more stable population than the “total” exclosure with more young individuals encountered (1,920 plants/acre) than mature plants (1,860 plants/acre). The biotic potential is fairly good at this time with an estimated 180 seedling plants/acre. Currently, 14% of the population were classified as decadent and 50% of these classified as dying. Average cover for basin big sagebrush is 10%. The dead to live ratio is currently 1:3.8, or 21% of the population is dead. Utilization is light with only 5% of the population exhibiting poor vigor.

Antelope bitterbrush has an estimated density of 980 plants/acre. Mature plants make up 61% of the population, while young plants make up 37% of the population. Average cover for antelope bitterbrush is 5%. Utilization is light and the plants exhibit good vigor leader growth of about 6-8 inches this year. This appears to be a healthy population with only one decadent plant and no dead ones encountered. Sand sagebrush has an estimated density of 480 plants/acre, most of which (75%) were classified as mature. Average cover for sand sagebrush is 1.5%. Biotic potential is high with an estimated 100 seedling plants/acre encountered in 1998. This abundance of seedlings is adequate to replace the few decadent and dead plants lost from the population. Point-center quarter data estimated 27 juniper trees/acre. Other species scattered throughout the site include: a low elevation form of mountain big sagebrush, rubber rabbitbrush, skunk bush sumac, green ephedra, and yucca.

The herbaceous understory is sparse, as indicated by a total cover of just over 1%. Three grass and 7 forb species were encountered in 1998. Blue grama was the most abundant, but it was only found in 4 quadrats. Other grasses include purple threeawn and six weeks fescue. The forbs were dominated by the annual nodding eriogonum. Most other forb species were only encountered in one quadrat.

1998 APPARENT TREND ASSESSMENT

Although there is little protective ground cover provided by herbaceous species at this time, there is currently little erosion apparent on the site. The basin big sagebrush population appears to be stable at this time with many healthy, young plants encountered. The antelope bitterbrush population also appears to be stable and healthy with only one decadent plant sampled and no dead plants found. Utilization of basin big sagebrush and Antelope bitterbrush is light with few plants exhibiting poor vigor. The herbaceous understory is nearly non-existent with only 2 grass and 7 forb species encountered.

HERBACEOUS TRENDS --
Herd unit 27R, Study no: 2

Type	Species	Nested Frequency '98	Quadrat Frequency '98	Average Cover % '98
G	Aristida purpurea	3	2	.18
G	Bouteloua gracilis	11	4	.33
G	Vulpia octoflora (a)	2	1	.00
Total for Annual Grasses		2	1	0.00
Total for Perennial Grasses		14	6	0.51
Total for Grasses		16	7	0.51
F	Artemisia dracunculus	2	1	.03
F	Draba spp. (a)	2	1	.00
F	Eriogonum cernuum (a)	132	51	.66
F	Euphorbia albomarginata	10	4	.02
F	Gilia spp. (a)	1	1	.00
F	Oenothera spp.	1	1	.00
F	Sphaeralcea grossulariaefolia	1	1	.03
Total for Annual Forbs		135	53	0.67
Total for Perennial Forbs		14	7	0.08
Total for Forbs		149	60	0.75

BROWSE TRENDS --
Herd unit 27R, Study no: 2

Type	Species	Strip Frequency '98	Average Cover % '98
B	Artemisia filifolia	18	1.50
B	Artemisia tridentata tridentata	74	10.03
B	Artemisia tridentata wyomingensis	1	-
B	Chrysothamnus nauseosus	3	.15
B	Ephedra viridis	0	-
B	Gutierrezia sarothrae	0	-
B	Juniperus osteosperma	1	3.12
B	Purshia tridentata	38	5.48
B	Rhus trilobata trilobata	0	-
B	Yucca spp.	1	.38
Total for Browse		136	20.67

CANOPY COVER --
Herd unit 27R, Study no: 2

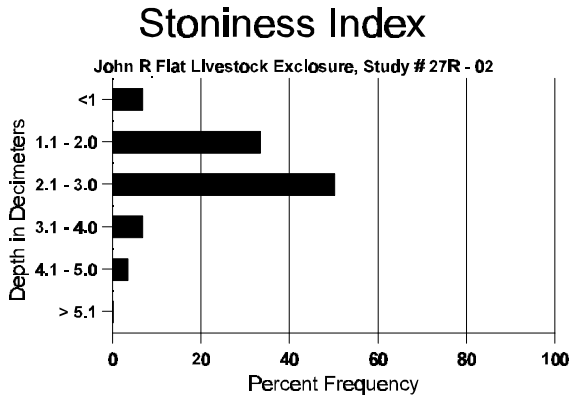
Species	Percent Cover '98
Juniperus osteosperma	5
Purshia tridentata	1

BASIC COVER --
Herd unit 27R, Study no: 2

Cover Type	Nested Frequency '98	Average Cover % '98
Vegetation	202	22.86
Litter	480	47.95
Cryptogams	112	4.34
Bare Ground	380	42.29

SOIL ANALYSIS DATA --
Herd Unit 27R, Study # 02, Study Name: John R. Flat Cattle Exclosure

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
26.8	72.0 (17.7)	5.4	90.2	4.0	5.8	.6	7.7	6.4	.3



PELLET GROUP FREQUENCY --
Herd unit 27R, Study no: 2

Type	Quadrat Frequency '98
Rabbit	9
Elk	5
Deer	46

BROWSE CHARACTERISTICS --
Herd unit 27R, Study no: 2

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia filifolia																		
S	98	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
Y	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	98	16	1	-	1	-	-	-	-	-	18	-	-	-	360	27	29	18
D	98	5	-	-	-	-	-	-	-	-	4	-	-	1	100			5
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3

% Plants Showing '98	Moderate Use	Heavy Use	Poor Vigor	%Change
	04%	00%	04%	

Total Plants/Acre (excluding Dead & Seedlings)	'98	480	Dec:	21%

Artemisia tridentata tridentata																		
S	98	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
Y	98	69	19	-	6	-	-	2	-	-	96	-	-	-	1920			96
M	98	49	32	3	8	1	-	-	-	-	93	-	-	-	1860	33	37	93
D	98	15	1	-	9	2	2	1	-	-	20	-	-	10	600			30
X	98	1	-	-	-	-	-	-	-	-	1	-	-	-	1160			58

% Plants Showing '98	Moderate Use	Heavy Use	Poor Vigor	%Change
	25%	02%	05%	

Total Plants/Acre (excluding Dead & Seedlings)	'98	4380	Dec:	14%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
M	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
% Plants Showing '98				Moderate Use 00%			Heavy Use 00%			Poor Vigor 00%					%Change			
Total Plants/Acre (excluding Dead & Seedlings)													'98		40	Dec:		-
Chrysothamnus nauseosus																		
M	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20	32	45	1
D	98	3	-	-	-	-	-	-	-	-	1	-	-	2	60			3
% Plants Showing '98				Moderate Use 00%			Heavy Use 00%			Poor Vigor 50%					%Change			
Total Plants/Acre (excluding Dead & Seedlings)													'98		80	Dec:		75%
Ephedra viridis																		
M	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	45	83	0
% Plants Showing '98				Moderate Use 00%			Heavy Use 00%			Poor Vigor 00%					%Change			
Total Plants/Acre (excluding Dead & Seedlings)													'98		0	Dec:		-
Gutierrezia sarothrae																		
M	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	11	10	0
% Plants Showing '98				Moderate Use 00%			Heavy Use 00%			Poor Vigor 00%					%Change			
Total Plants/Acre (excluding Dead & Seedlings)													'98		0	Dec:		-
Juniperus osteosperma																		
M	98	-	-	-	-	-	-	-	1	-	1	-	-	-	20	-	-	1
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
% Plants Showing '98				Moderate Use 00%			Heavy Use 00%			Poor Vigor 00%					%Change			
Total Plants/Acre (excluding Dead & Seedlings)													'98		20	Dec:		-
Purshia tridentata																		
Y	98	13	1	-	3	1	-	-	-	-	18	-	-	-	360			18
M	98	18	7	-	2	3	-	-	-	-	28	2	-	-	600	36	50	30
D	98	-	-	-	-	1	-	-	-	-	-	-	-	1	20			1
% Plants Showing '98				Moderate Use 27%			Heavy Use 00%			Poor Vigor 02%					%Change			
Total Plants/Acre (excluding Dead & Seedlings)													'98		980	Dec:		2%
Rhus trilobata trilobata																		
M	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	87	132	0
% Plants Showing '98				Moderate Use 00%			Heavy Use 00%			Poor Vigor 00%					%Change			
Total Plants/Acre (excluding Dead & Seedlings)													'98		0	Dec:		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Yucca spp.																		
M	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20	46	41	1

% Plants Showing '98	Moderate Use 00%	Heavy Use 00%	Poor Vigor 00%	%Change

Total Plants/Acre (excluding Dead & Seedlings)	'98	20	Dec:	-